What is claimed is:

Sub A3 > 1. A method for correcting influences of a distortion aberration of a lens in an image formed on an image surface by said lens, wherein distortions and least one kind of image information belonging to each position of the image are corrected according to a distortion aberration characteristic of the lens, and the distortion aberration characteristic indicates distortions at respective distances from an optical axis of the lens on said image surface.

2. A method according to claim 1, wherein said at least one kind of image information belonging to each position may be one of a density or brightness (luminance) value of each pixel of said image, and various other signal values belonging to each pixel of said image.

3. A method according to claim 1, wherein the distortion aberration characteristic is expressed by a distortion ratio $f(r)=(r'-r)/r$, where the distances from the optical axis on said image surface after correction of said position information are denoted by r, and said distances from the optical axis on said image surface before correction of said position information are denoted by r',

points of the image before the correction having coordinates (x', y') corresponding to predetermined points of the image after the correction having coordinates (x, y) are obtained based on equations,

$$x'=x\{1+f(r)\}, \text{ and}$$

$$y'=y\{1+f(r)\},$$

where a position of the optical axis on the image surface is assumed to have coordinates (0, 0), and

values of said at least one kind of image information at the corresponding points of the image before the correction having the coordinates (x', y') are obtained, as values D' of said at least one kind of image information at said predetermined points of the image after the correction having the coordinates (x, y), based on a value or values of said at least one kind of image information at one or more image points having the coordinates (u, v) located near each of the corresponding points having the coordinates (x', y') on the image before the correction, where u and v are integers.

4. A method according to claim 3, wherein said values D' of said at least one kind of image information at said predetermined points of the image after the correction having the coordinates (x, y) are further corrected by an equation

$$D=D'\times\{1+f(r)\}\times\{1+r\times f'(r)+f(r)\},$$

to obtain further corrected values D of said at least one kind of image information at said predetermined points of the image after the correction having the coordinates (x, y).

5. An apparatus for correcting influences of a distortion aberration of a lens in a first image formed on an image surface by said lens, said apparatus comprises;

an image reading unit for reading the first image formed on the image surface by the lens;

a distortion aberration characteristic storing unit for storing a distortion aberration characteristic of the lens, where the distortion aberration characteristic indicates distortions at respective distances from an optical axis on the image surface;

a distorted position determining unit for determining distorted positions in the first image read by the image reading unit, corresponding to predetermined positions in a second image in which said distortions are corrected, and

a position-dependent information obtaining unit for obtaining at least one kind of image information belonging to the above predetermined positions based on the distortion aberration characteristic.

6. An apparatus according to claim 5, wherein said at least one kind of image information belonging to each position may be one of a density or brightness (luminance) value of each pixel of said image, and other various signal values belonging to each pixel of said image.

7. An apparatus according to claim 5, wherein the distortion aberration characteristic is expressed by a distortion ratio $f(r)=(r'-r)/r$, where the distances from the optical axis on said image surface after correction of said position information are denoted by r, and said distances from the optical axis on said image surface before correction of said position information are denoted by r',

said position correcting unit obtains points of the image

before the correction having coordinates (x', y') corresponding to predetermined points of the image after the correction having coordinates (x, y), based on equations,

$$x'=x\{1+f(r)\}, \text{ and}$$

$$y'=y\{1+f(r)\},$$

where a position of the optical axis on the image surface is assumed to have coordinates (0, 0), and

A3 cancel.

said position-dependent information obtaining unit obtains, as a value D' of said at least one kind of image information at each of said predetermined points of the second image having the coordinates (x, y), a value of said at least one kind of image information at a corresponding one of said points having the coordinates (x', y'), based on a value or values of said at least one kind of image information at one or more image points having the coordinates (u, v) located near said corresponding one of the points having the coordinates (x', y') in the first image, where u and v are integers.

8. An apparatus according to claim 7, wherein said density obtaining unit further corrects said values D' of said at least one kind of image information at said predetermined points of the second image having the coordinates (x, y), by an equation

$$D=D'\times\{1+f(r)\} \times \{1+r\times f'(r)+f(r)\},$$

to obtain further corrected values D of said at least one kind of image information at said predetermined points of the second image having the coordinates (x, y).